ANAEROBIC CONNECTOR TERMINATION GUIDE

Nexans Cabling Solutions

Anaerobic OF toolkit: N102.230 – Revision C

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Health and Safety Requirements

Safe Handling

The broken ends of any fibre and the scraps of fibre created during termination (or splicing) are potentially dangerous so must be handled with care at all times.
The ends are extremely sharp and can easily penetrate your skin or eyes . Once in your skin etc., scraps are almost impossible to find and therefore, their removal is very difficult.

- Do not pick up scrap pieces of fibre by their ends.
- You must properly dispose of all scraps using a dedicated container (as included in the toolkit).
- Do not drop fibre scraps on the floor where they could stick in carpets, shoes or cloths and be later carried elsewhere - including home.
- Never eat or drink anywhere near the work area. Fibre scraps could get into food or drink undetected and be swallowed.

Materials Safety

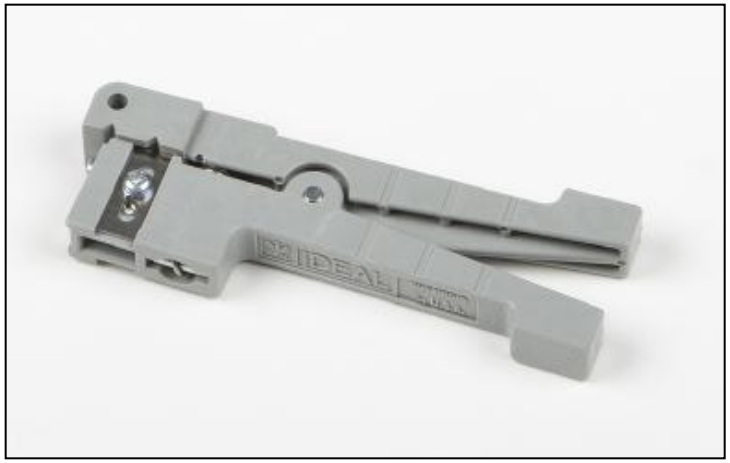
Fibre optic splicing and termination use various chemical cleaners and adhesives as part of the processes. Correct handling procedures for these substances must be observed.

- If you are not certain of how to deal with them, ask the manufacturer for a MSDS (Material Safety Data Sheet).
- Always work in well-ventilated areas.
- Even if safe to do so, avoid skin contact as much as possible and immediately stop using chemicals that cause allergic reactions.
- Even simple isopropyl alcohol, used as a cleaner, is flammable and must be handled correctly.

Note

The above are basic safety requirements – your company, regional location or particular installation requirements may specify additional requirements.

Overview of the tools



1. Cable stripper

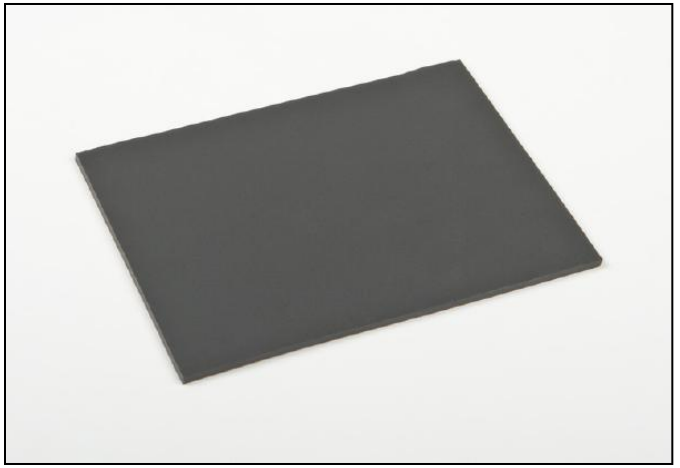
2. Stripping tool

3. Scissors for aramid yarns

4. Scriber

Overview of the tools

5a. Polishing jig SC-ST (2.5)
5b. Polishing jig LC (1.25)



6. Polishing pad

7. Microscope (400x magnification)
1.25, 2.5 mm adaptors / Micro-USB power input

8. Crimping tool

Overview of the tools

9. Bottle for alcohol

10. Fibre scrap container

11a. Anaerobic adhesive
11b. Anaerobic activator

(N102.221)

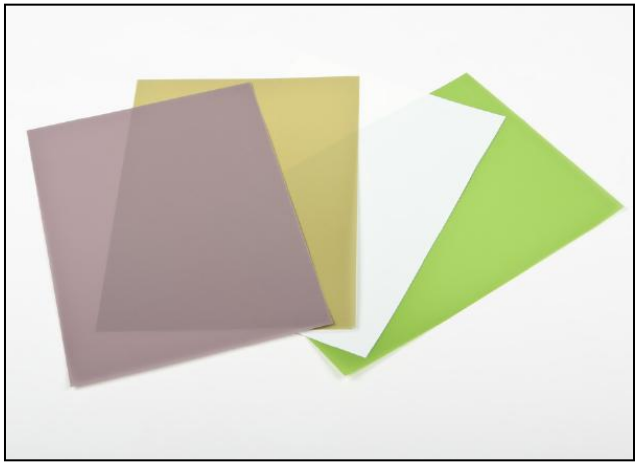
Storage of the adhesive & activator

- Optimal Storage: 8 °C to 21 °C.
- Storage below 8 °C or greater than 28 °C can adversely affect product properties.

-Material removed from containers may be contaminated during use. Do not return product to the original container.

Overview of the tools

12. Syringe and applicator tip
(50pc: N102.225)



13a. Polishing paper 12µ (yellow)
MM + SM
(10pc: N102.226)

13b. Polishing paper 3µ (pink)
MM + SM
(50pc: N102.223)

13c. Polishing paper 1µ (green)
MM only
(50pc: N102.222)

13d. Polishing paper 0.3µ (White)
SM only
(50pc: N102.228)

14. Lint free cloth (N102.224)

About the microscope

Laser safety

The microscope is fitted with filters, which greatly reduce the risk of eye damage due to accidental exposure to light from either an operating system or visual fault locator.
Before use, always ensure that the system lasers are 'Off' before looking into a fibre.

Always observe eye safety procedures compliant with your company policy, relevant laser safety standards and safety practice.

Power Supply

Either by AAA alkaline battery, or via the external micro-USB connector using the supplied USB cable..

Accessories

Fiber connector adaptors. 2.5 mm for SC/ST and 1.25 mm for LC.

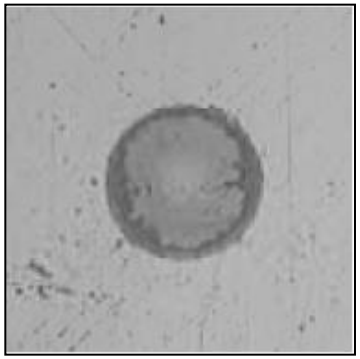
Triple-mode illumination: coaxial, oblique and core

Press the toggle button to select either coaxial or oblique illumination.
Coaxial illumination uses a white LED and Oblique illumination uses a green LED.

To illuminate a patch lead core, insert the other end of the patch lead into the 2.5 mm hole on the side of the instrument, which has a white LED, and use the coaxial illumination mode.

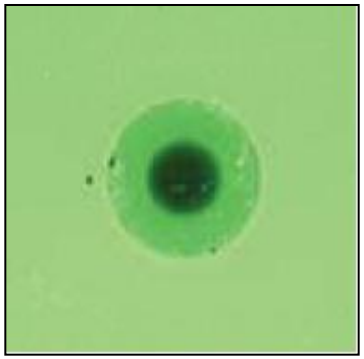
Also refer to the user manual included in the microscope soft case.

About the microscope



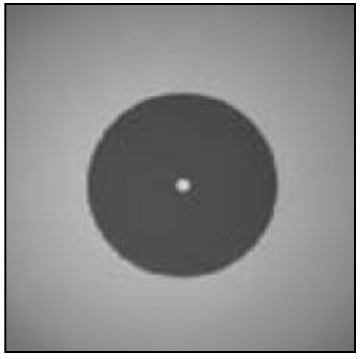
Coaxial illumination

Coaxial illumination maximizes the detail seen by the user. This feature allows fine scratches and contamination to be easily seen.



Oblique illumination

With oblique illumination, the light from the LED hits the end-face at an angle, making the core clearly visible and therefore allow the user to see any surface debris or contamination.
However the amount of scratches that can be seen on the ferrule is Limited.



Core illumination

Core illumination shows the details of the fiber core, or for continuity testing.
It uses the inbuilt LED visible light source to inject the light to the patch cord, so the fiber core area can be clearly shown on the screen.

SC connector installation

Also applicable for ST-connectors

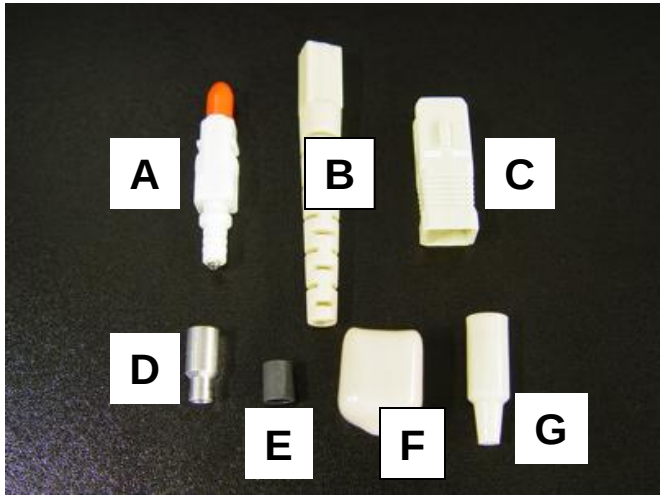
SC connector components

N205.120: LANmark-OF SC Connector MM anaerobic 900µ & 2.8mm cable (1 piece)
N205.640bulk: LANmark-OF SC connectors MM anaerobic 900µm (100 pieces)

N205.645bulk: LANmark-OF SC Connector SM anaerobic 900µm (100 pieces)

A : Connector
B : Long Strain relief boot **(*)**
C : Connector shell
D : Crimp ring for 3mm cable **(*)**
E : Shrinkable cable label **(*)**
F : Large dust cap
G : Short Strain relief boot

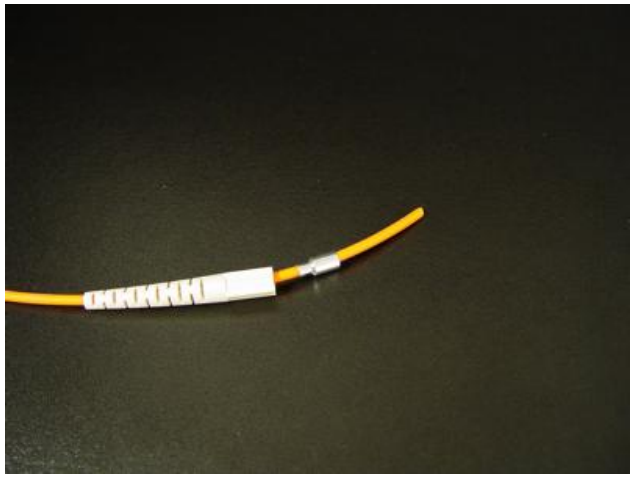
(*): Only provided with N205.120



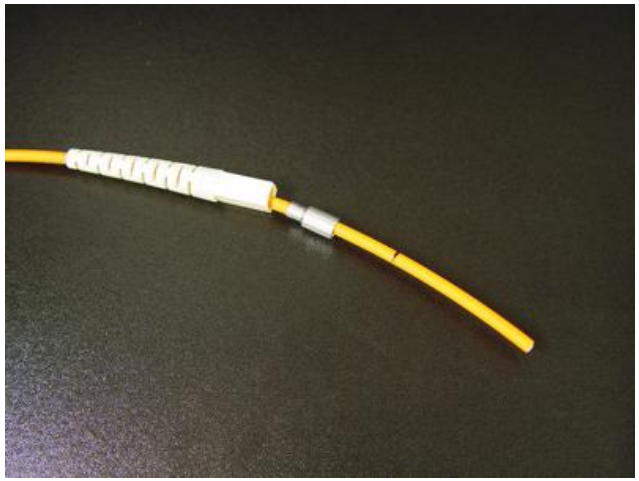
Preparation of the fibre

CABLE (N205.120 only)

Thread the strain relief boot long (B) on the cable followed by the crimp ring (D).

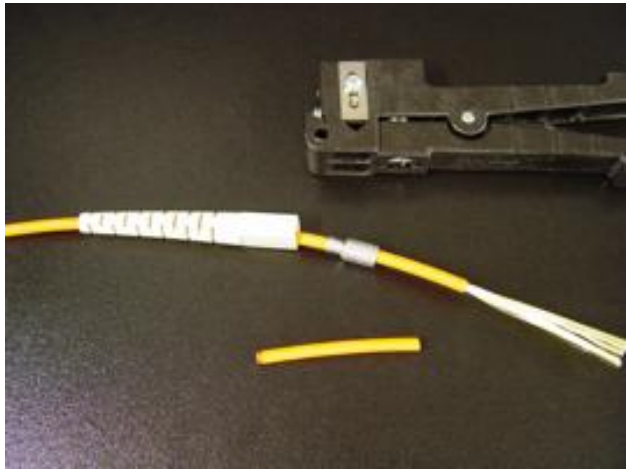


Slide the boot and crimp ring out of the way and measure and mark 35mm from the end of the cable's outer jacket.

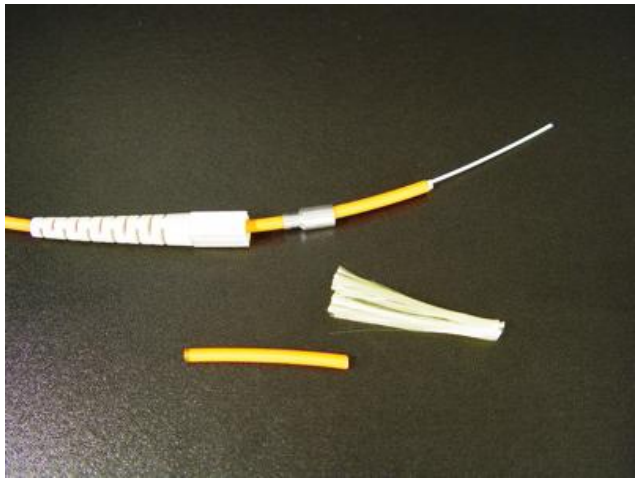


Preparation of the fibre

Strip off the 35mm section of outer jacket with the cable stripper tool (1).

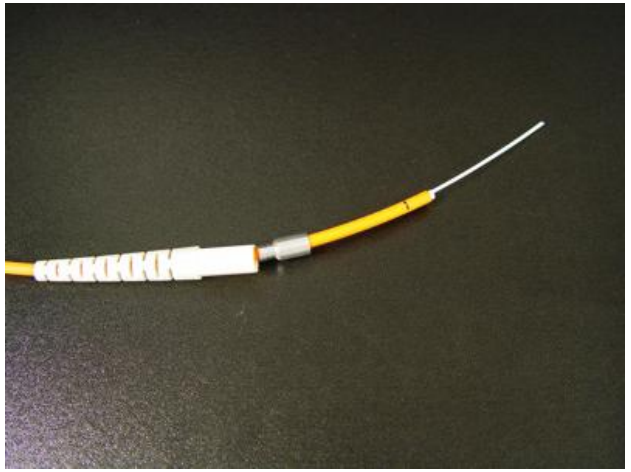


Use scissors (3) to trim the aramid yarn flush with the end of the outer jacket.

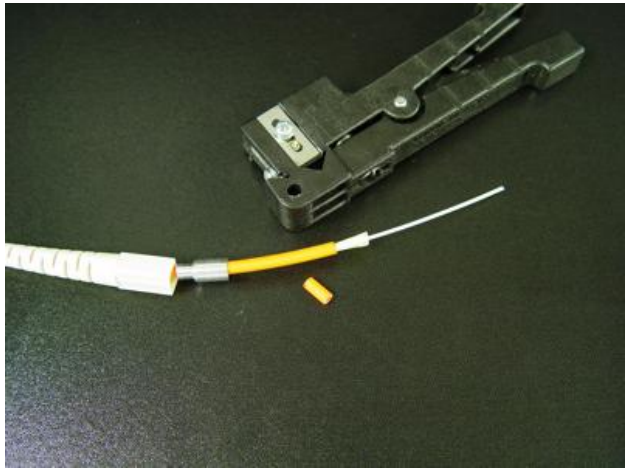


Preparation of the fibre

Measure and mark 6mm from the end of the outer jacket.



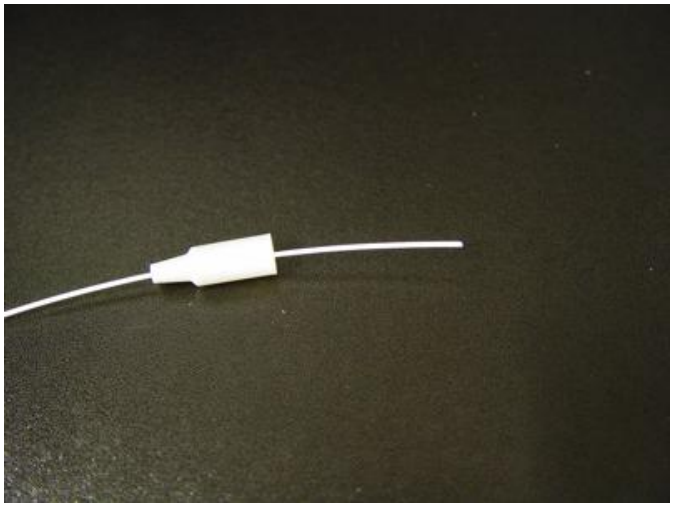
Strip off the 6mm section of outer jacket so as to expose 6mm of aramid yarns.



Preparation of the fibre

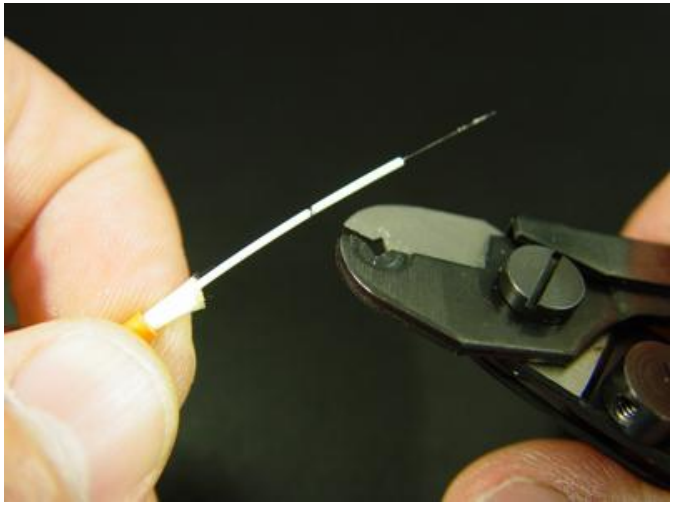
900µ BUFFERED FIBRE

Thread the short strain relief (G) onto the fibre.



CABLE AND FIBRE

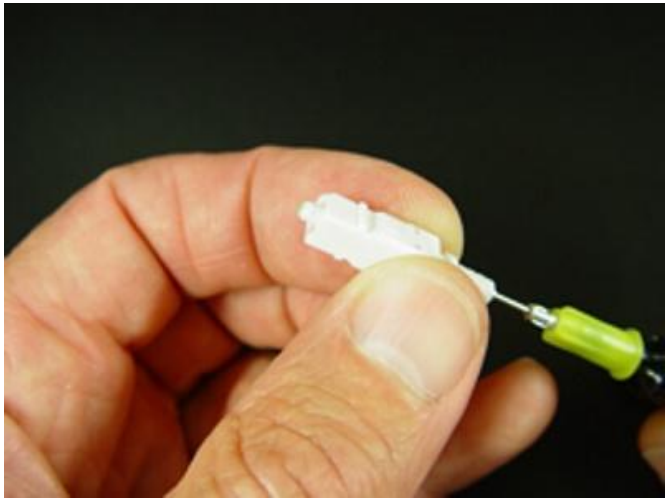
Measure and mark 28mm from the end of the fibre.
Remove 28mm of the buffer with the stripping tool (2).



Insertion into the connector

Take a syringe (12) and fit the applicator tip. Remove the plunger from the syringe body and pour anaerobic adhesive into the body. Replace the plunger and invert the syringe to allow the air bubbles to escape.

Each time you inject a new connector, wipe the needle tip clean to be sure that it is completely free of adhesive. Insert the syringe tip into the back end of the connector (A) until it seats. Maintain pressure and slowly inject anaerobic adhesive until a bead appears on the end of the connector.



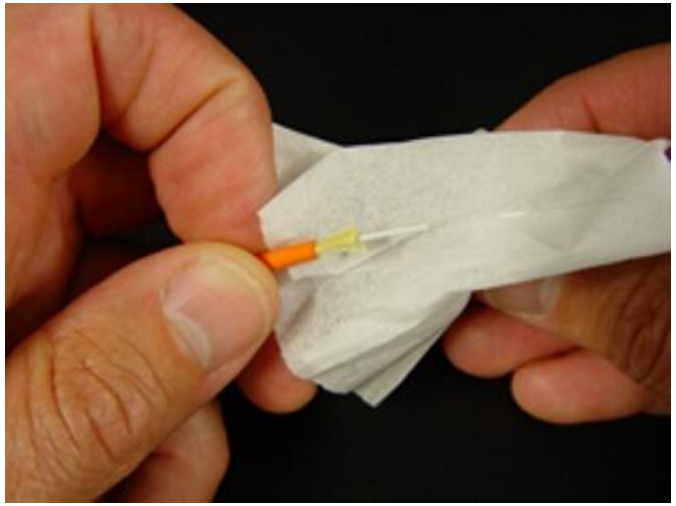
Insertion into the connector

Continue to inject adhesive until
the bead covers more than half of the ferrule's end face.

Release the pressure on the plunger
and withdraw the needle straight back.

<u>DO NOT ALLOW ADHESIVE TO FILL THE BACK OF THE CONNECTOR !!</u>

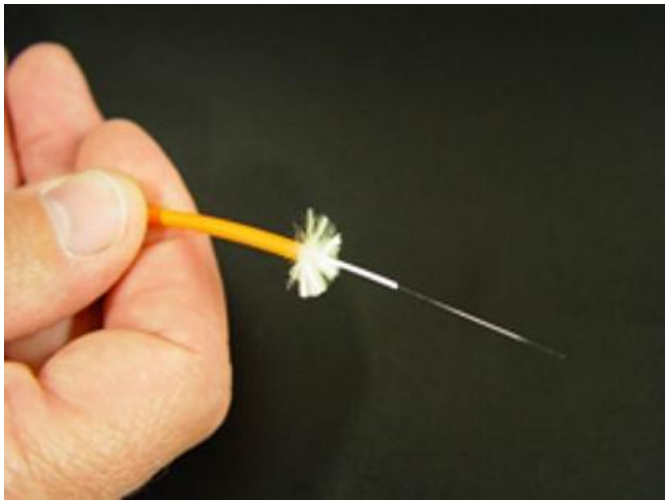
Clean the fibre with a lint free cloth (14) moistened with isopropyl alcohol (9) until the fibre starts to squeak. Wipe straight towards the fibre end.



Insertion into the connector

CABLE (N205.120 only)

Spread the aramid yarns to allow the connector to slide over the entire exposed length of the fibre.



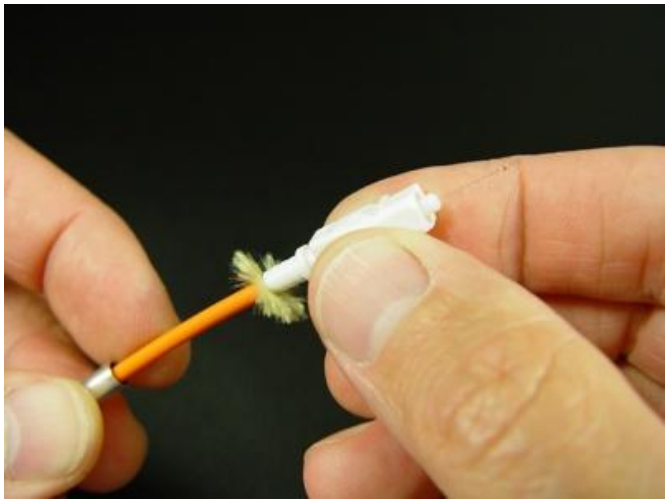
Immerse the cleaned fibre in the activator (11b).

Avoid putting the aramid yarns in the activator.

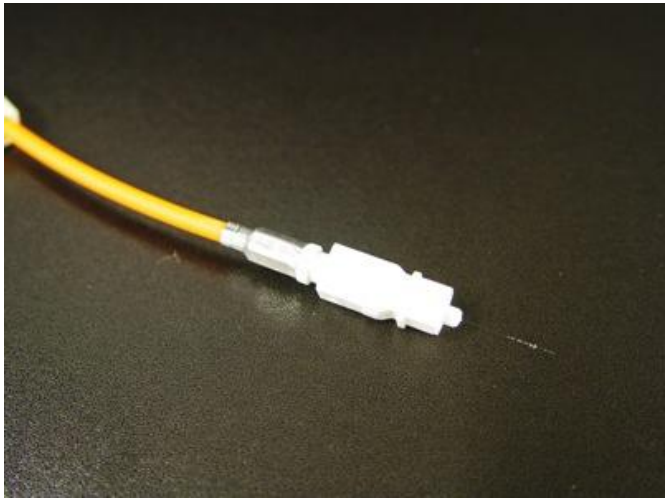
Insertion into the connector

CABLE (N205.120 only)

Slowly thread the connector straight onto the fibre until the buffer seats at the base of the ferrule.
Be sure to insert the fibre in the connector within 10 seconds of dipping it into the activator. Otherwise curing time will be extended.



Slide the crimp ring (D) over the aramid yarns and crimp it with the crimping tool (8).
-First step : crimp on the aramid yarns (Use die 0.178”)
-Second step : crimp on the cable (Use die 0.128”)

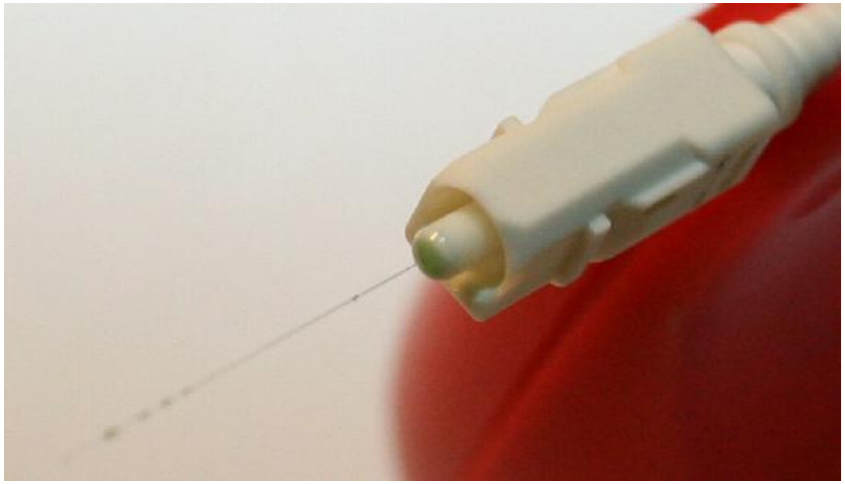


Insertion into the connector

CABLE AND FIBRE

After the connector has been fitted on the fibre, put the connector safely aside to let the adhesive cure for at least 1 minute.

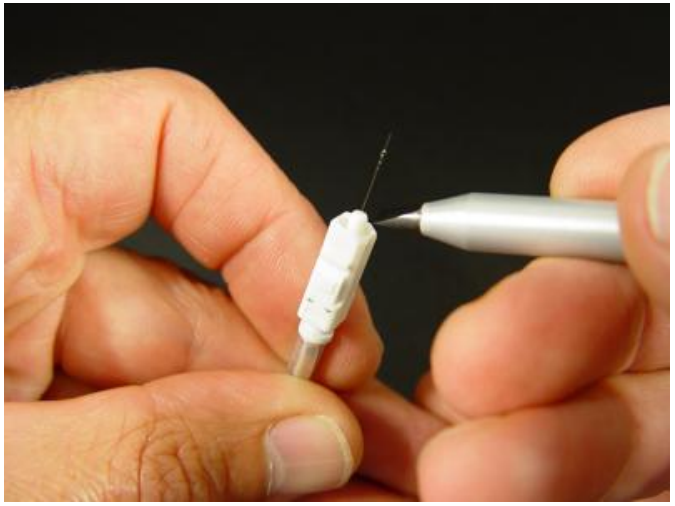
The bead of glue is important to avoid breaking the fibre inside the ferrule during the next step. A large bead further reduces the risk of breaking the fibre inside the connector .



CABLE AND FIBRE

Scoring the fibre.
Hold the connector in a vertical position with the fibre pointing upward. Score the fibre with the scriber (4) by drawing the scoring blade lightly against it, just above the adhesive bead. The fibre should merely be touched and not severed. Detach the fibre by pulling and put it in the fibre scrap container (10).

Be sure to dispose of all fiber ends per company practice



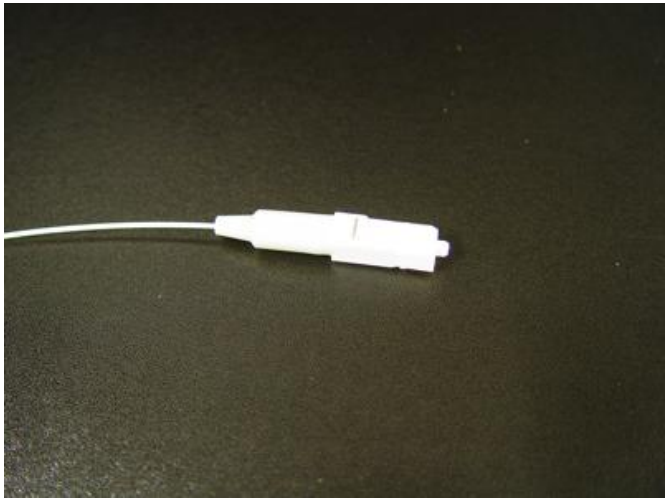
Insertion into the connector

CABLE (N205.120 only)

Push the boot onto the rear part of the connector.

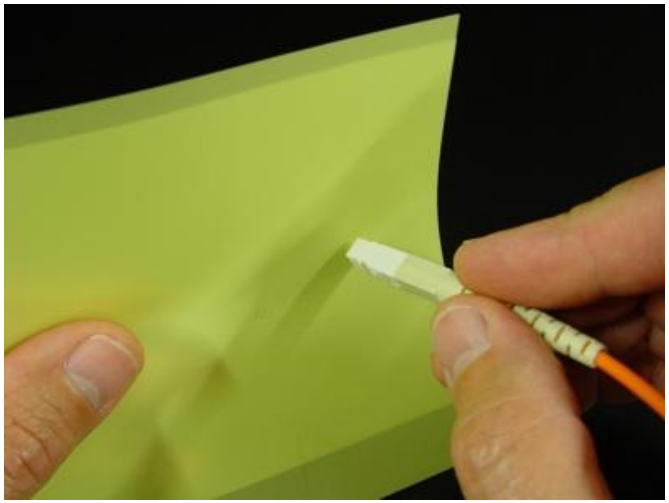
FIBRE

Push the boot onto the rear part of the connector.



Polishing

Check the fibre end.
Polish the endface with the 12µ polishing paper (13a yellow) (hold the paper in one hand, do not place it on a surface yet, this in order to avoid pressure on the tip of the connector).
Only polish the top part of the bead and proceed to the next step.



Clean the polishing pad(6) with a lint free cloth moistened with isopropyl alcohol (9). Wipe a layer of alcohol onto the rubber pad.
Before the alcohol evaporates, place the 3µ polishing paper (13a pink) on the polishing pad shiny side down. The alcohol creates a suction on the polishing paper and holds it in place.

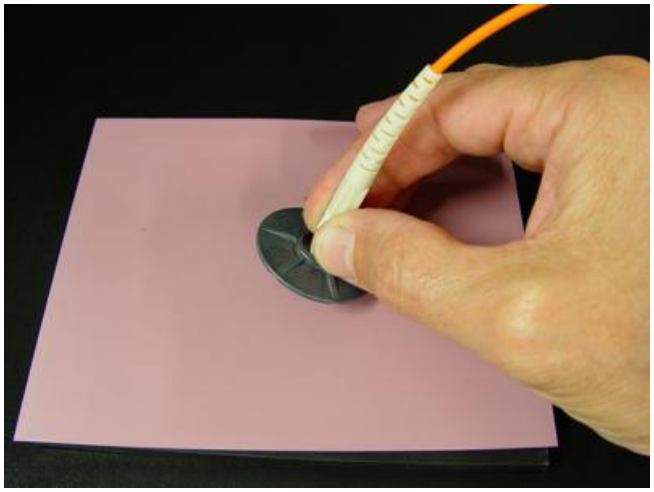
Polishing

Preparation of the polishing jig for SC-ST connector (5a).
Wipe the polishing surface of the polishing jig with a lint-free cloth moistened with isopropyl alcohol. You may blow the entire jig clean with compressed air if necessary.

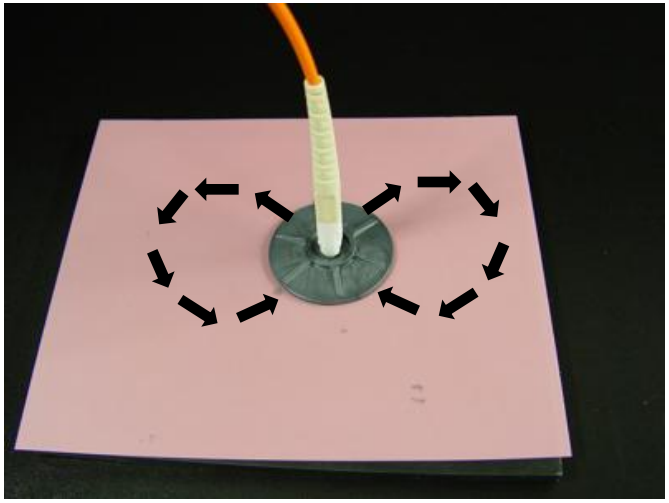
Push the ferrule into the jig until it stops.

Polishing

Gently place the jig with the connector in it on the pink paper that is located on the polishing pad.
The best practice is to place the edge of the jig on the polishing paper and gently tilt it until the complete surface of the jig touches the paper.
Remember the tip is a ragged glass end which can easily be damaged.

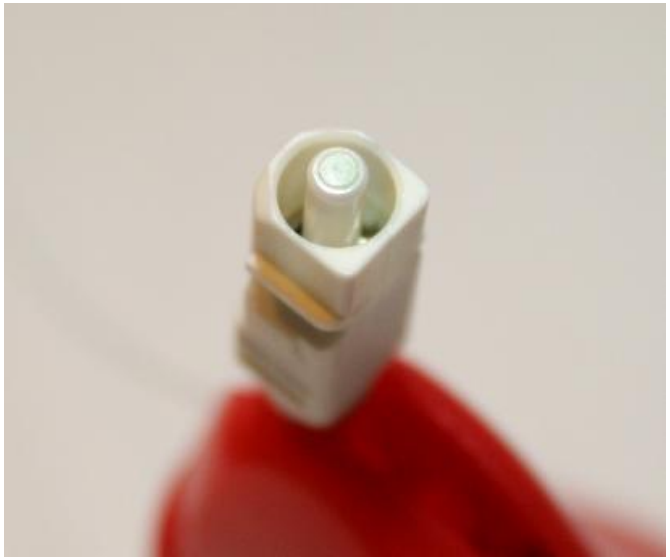


Move the jig in a figure of eight pattern by holding only the jig. The speed of your figure of eights should be between one and two per second.



Polishing

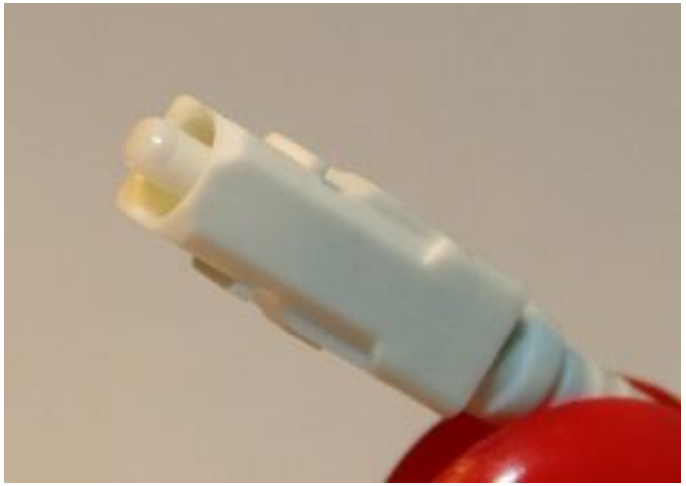
Once the fibre is supported by the epoxy bead, begin applying light pressure on the connector while polishing in a figure of eight motion. Continue to polish on the 3µ polishing paper until a thin layer of adhesive remains on the tip. Stop when the outer edges of the epoxy layer start to break up and feather.



Prepare to perform the **1µ (MM) or 0.3µ (SM)** finish. Using an isopropyl alcohol dampened lint-free cloth, clean the ferrule, the polishing jig and 3µ Polishing paper. Remove the 3µ polishing paper. Clean the rubber pad. Wipe a layer of alcohol onto the rubber pad.
Before the alcohol evaporates, place the **1µ or 0.3µ** polishing paper (**13c: green / 13d: White**) shiny side down on the rubber pad. The alcohol creates a suction on the polishing paper and holds it in place.

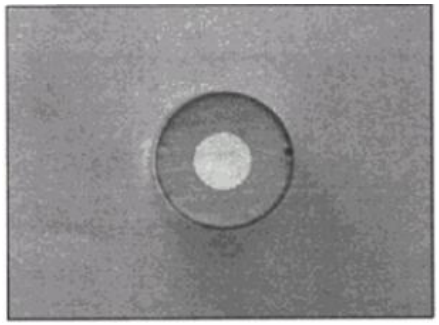
Polishing

Lightly polish until all the adhesive is removed (15 to 20 figure of eights).
<u>Before inspection with the microscope:</u>
Using an isopropyl alcohol dampened lint-free cloth, clean the ferrule.
During this process, gently push back the ferrule: it should move back and then return to its original position when the pressure is released.
If the ferrule is not moving, the back of the connector is glued and there is no recovery possible: cut the connector and try again.

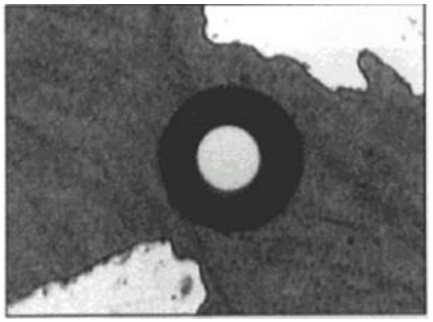


Place the SC-ST adapter on the microscope.
Insert the connector in the adapter.
Turn on the light and adjust the focus.

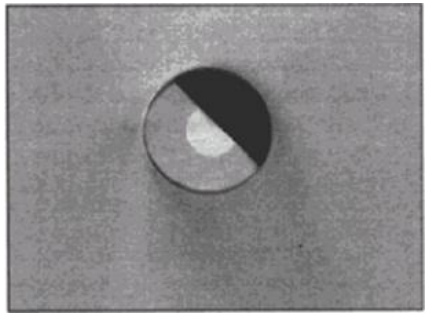
Polishing



Good polishing result.

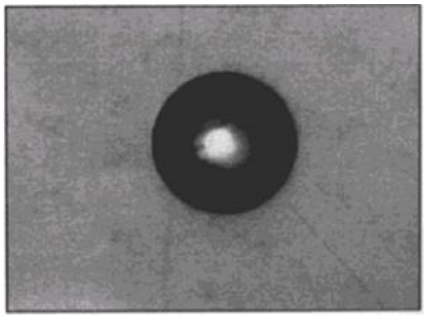


Needs more polishing.
Some adhesive is still on the ferrule.



Too much pressure when scribing.

NO RECOVERY POSSIBLE



Fibre scribed too long and broke off during polishing or too much downward pressure during polishing.

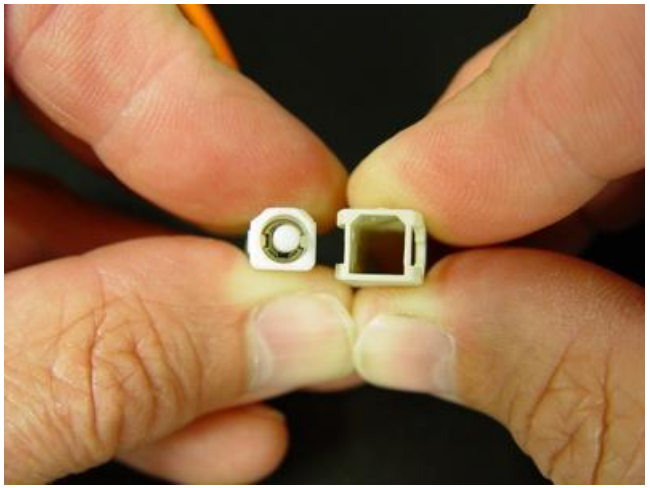
Final assembly

SC connector assembly

Once the SC connector has been mounted and polished, the housing can be fitted onto the body.

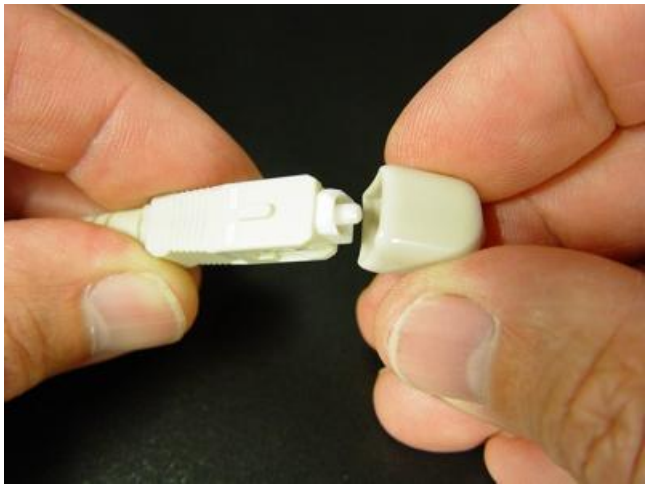
While holding the connector firmly by the boot, align the chamfers on both the connector and shell (C) and snap into place.

A positive click will be heard when the shell is fully engaged.



Place the dust cap (F) on top of the connector to protect the end face.

The connector is now assembled.



LC connector installation

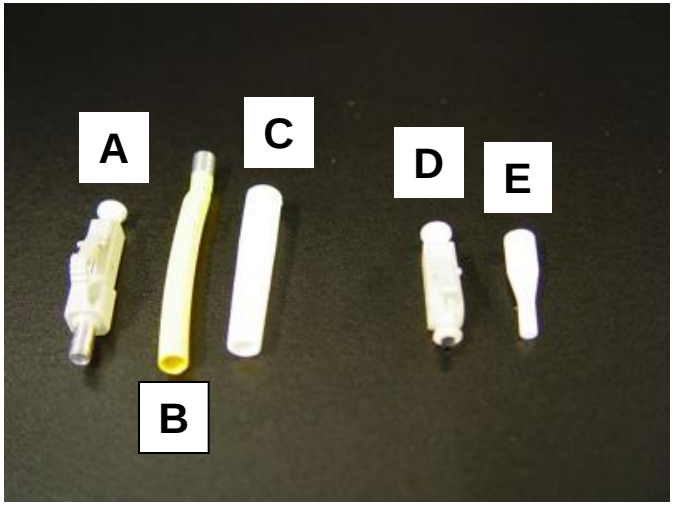
LC connector components

N205.630: LANmark-OF LC Connector MM anaerobic 900µm (per piece)
N205.630bulk: LANmark-OF LC Connector MM Anaerobic 900µm (100 pieces)
N205.631: LC Connector MM anaerobic – 1.6 to 2.2mm cable (per piece)

N205.635bulk: LANmark-OF LC Connector SM anaerobic – 900µm (100 pieces)

<u>900 µm coating</u>
Each package contains an LC connector with dust cap (D), and a short strain relief boot (E)

<u>1.6 to 2.2mm cable (N205.631)</u>
Each package contains an LC connector with dust cap (A), a crimp ring for cable (B) and a long strain relief boot (C)

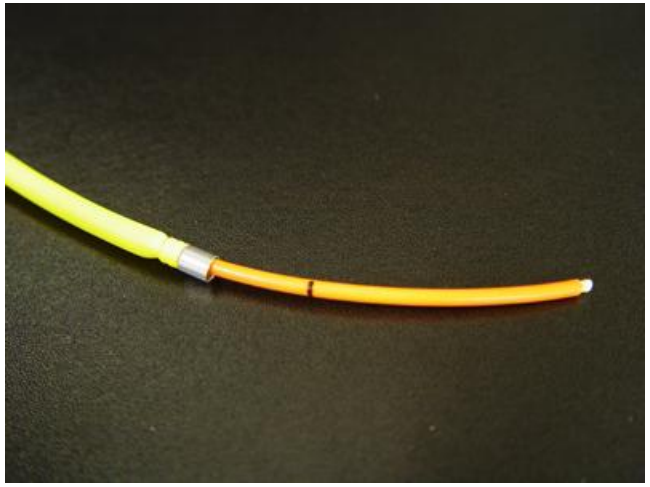


Preparation of the fibre

CABLE (N205.631 only)

Thread the strain relief boot long (C) on the cable followed by the crimp ring (B).

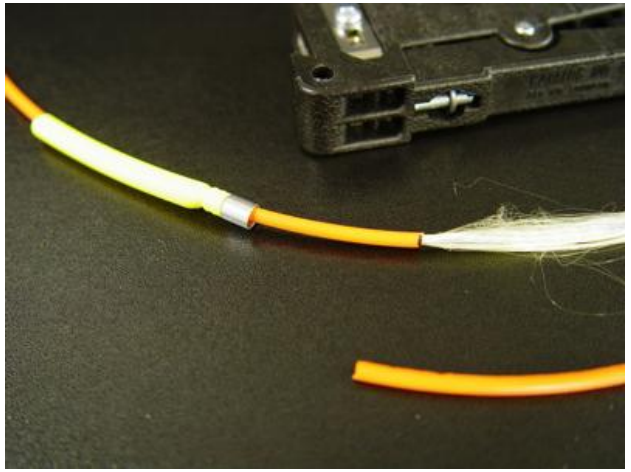
Slide the boot and crimp ring out of the way and measure and mark 35mm from the end of the cable's outer jacket.



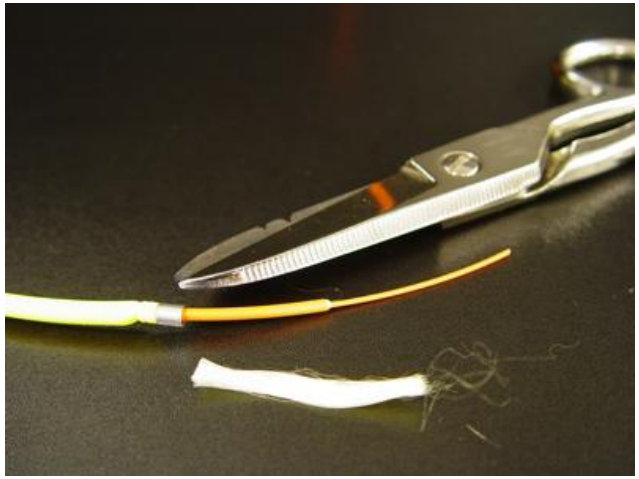
Preparation of the fibre

CABLE (N205.631 only)

Strip off the 35mm section of outer jacket with the cable stripper tool (1).



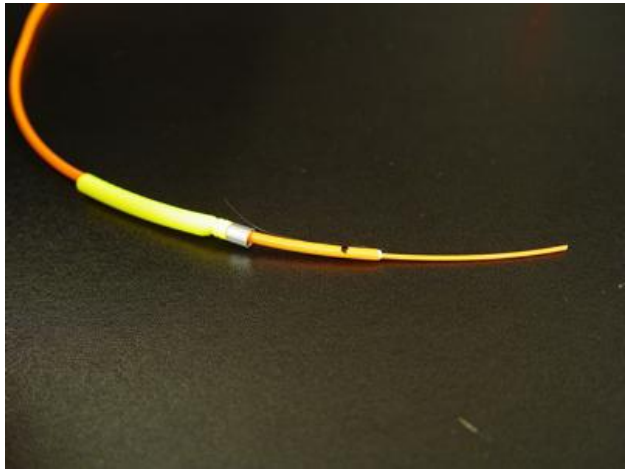
Use scissors (3) to trim the aramid yarn flush with the end of the outer jacket.



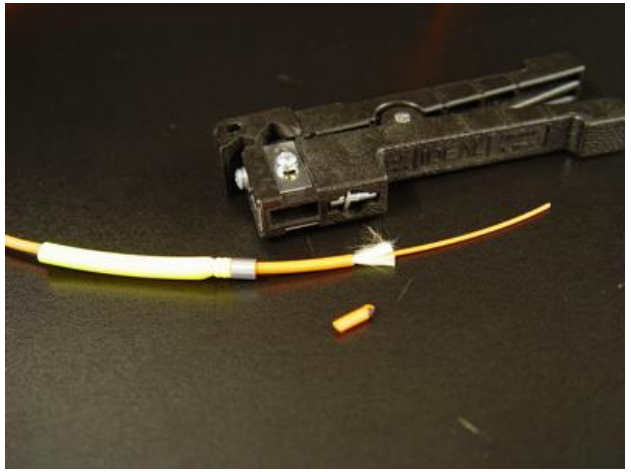
Preparation of the fibre

CABLE (N205.631 only)

Measure and mark 6mm from the end of the outer jacket.



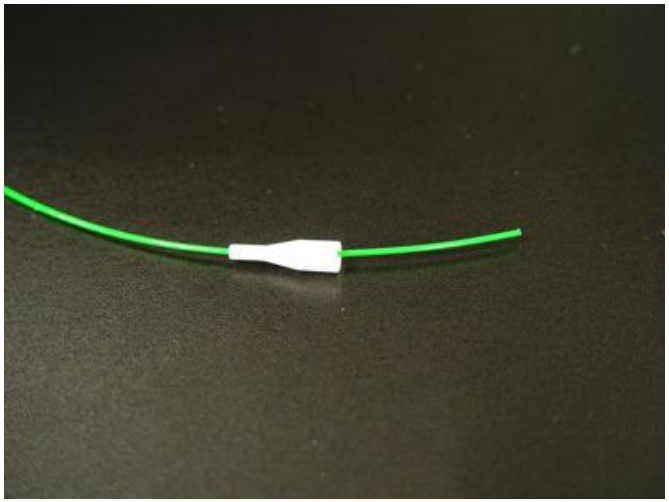
Strip off the 6mm section of outer jacket so as to expose 6mm of aramid yarns.



Preparation of the fibre

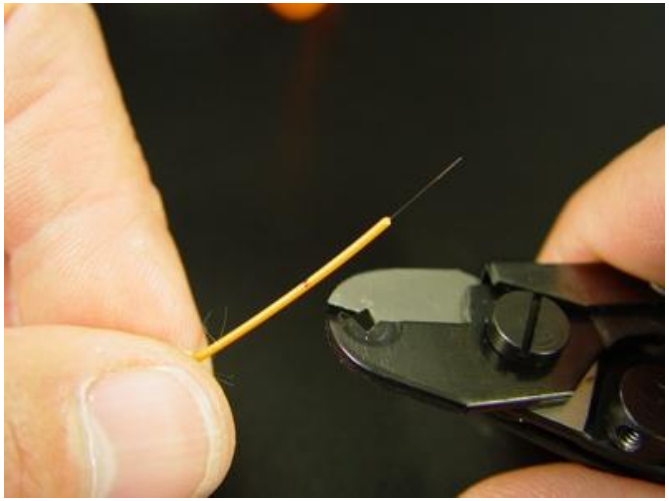
900µ BUFFERED FIBRE

Thread the short strain relief (E) onto the fibre.



CABLE AND FIBRE

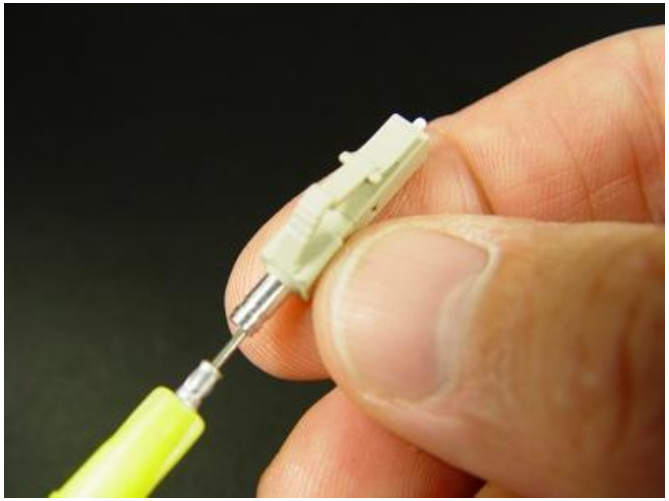
Measure and mark 28mm from the end of the fibre.
Remove 28mm of the buffer with the stripping tool (2).



Insertion into the connector

Take a syringe (12) and fit the applicator tip. Remove the plunger from the syringe body and pour anaerobic adhesive into the body. Replace the plunger and invert the syringe to allow the air bubbles to escape.

Each time you inject a new connector, wipe the needle tip clean to be sure that it is completely free of adhesive. Insert the syringe tip into the back end of the connector (A) until it seats. Maintain pressure and slowly inject anaerobic adhesive until a bead appears on the end of the connector.



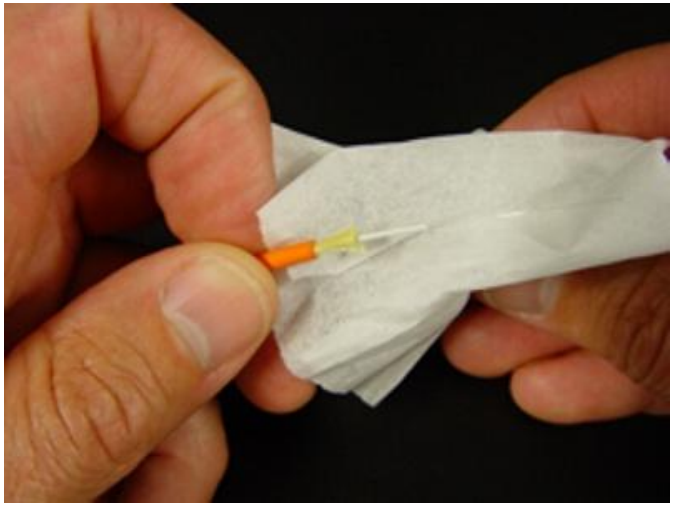
Insertion into the connector

Continue to inject adhesive until
the bead covers more than half of the ferrule's end face.
Note: SC picture – Also applicable to LC ferrule

Release the pressure on the plunger
and withdraw the needle straight back.

DO NOT ALLOW ADHESIVE TO FILL THE BACK OF THE CONNECTOR !!

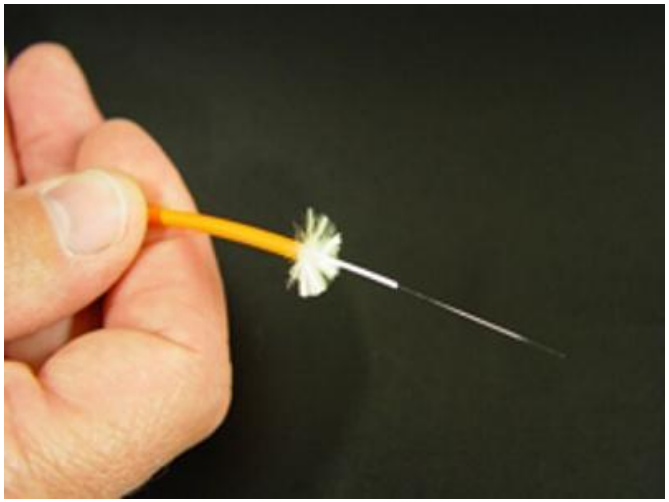
Clean the fibre with a lint free cloth (14) moistened with isopropyl alcohol (9) until the fibre starts to squeak. Wipe straight towards the fibre end.



Insertion into the connector

CABLE (N205.631 only)

Spread the aramid yarns to allow the connector to slide over the entire exposed length of the fibre.



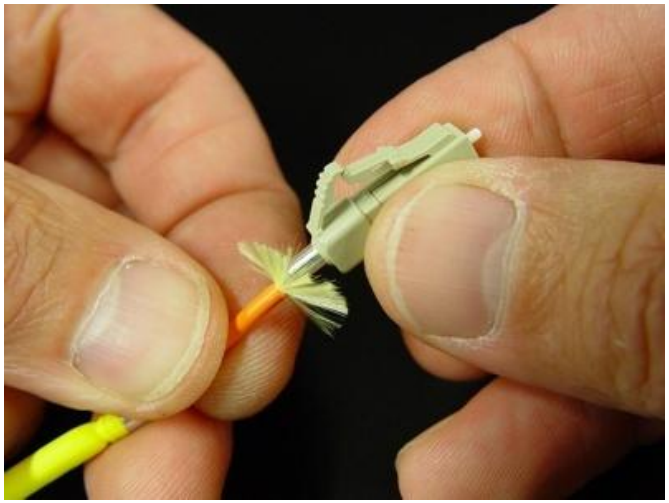
Immerse the cleaned fibre in the activator (11b).

Avoid putting the aramid yarns in the activator.

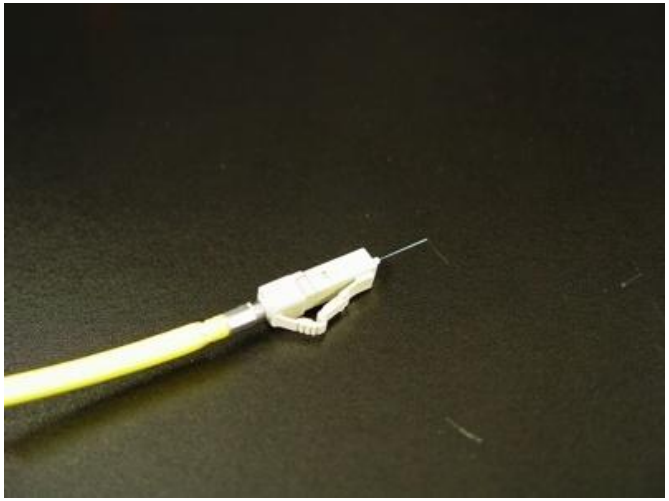
Insertion into the connector

CABLE (N205.631 only)

Slowly thread the connector straight onto the fibre until the buffer seats at the base of the ferrule.
Be sure to insert the fibre in the connector within 10 seconds of dipping it into the activator. Otherwise curing time will be extended.



Slide the crimp ring (B) over the aramid yarns and crimp it with the crimping tool (8).
-First step : crimp on the aramid yarns (Use die 0.128”)
-Second step : heat the shrinking tube until it fits around the cable.



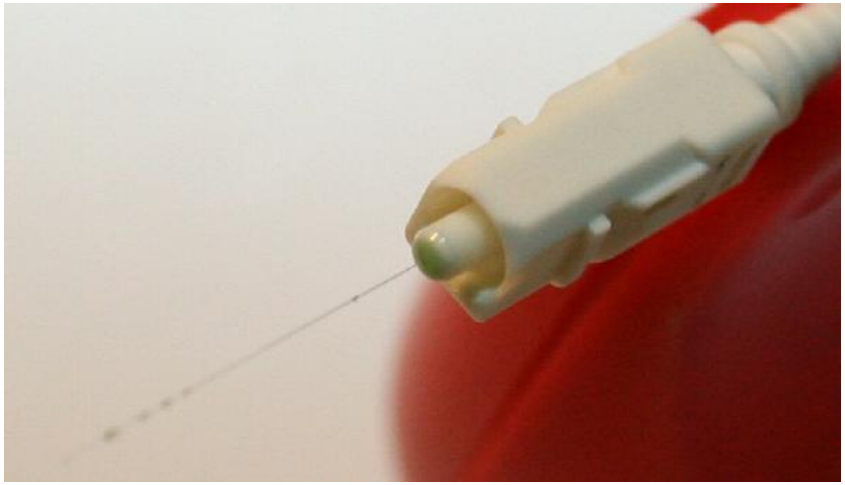
Insertion into the connector

CABLE AND FIBRE

After the connector has been fitted on the fibre, put the connector safely aside to let the adhesive cure for at least 1 minute.

The bead of glue is important to avoid breaking the fibre inside the ferrule during the next step. A large bead further reduces the risk of breaking the fibre inside the connector .

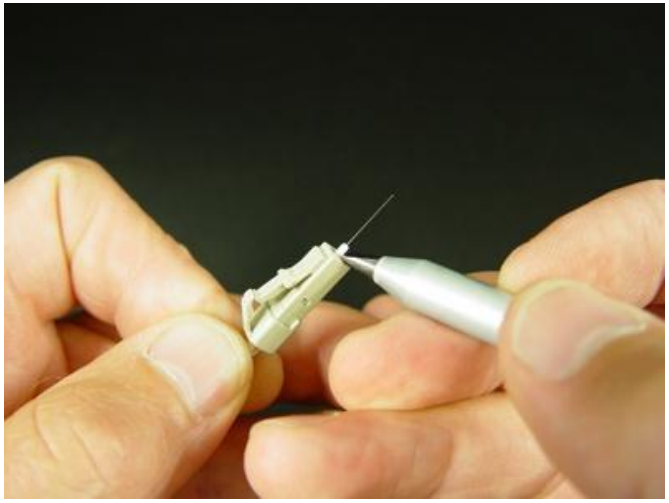
Note: SC picture – Also applicable to LC ferrule



CABLE AND FIBRE

Scoring the fibre.
Hold the connector in a vertical position with the fibre pointing upward. Score the fibre with the scriber (4) by drawing the scoring blade lightly against it, just above the adhesive bead. The fibre should merely be touched and not severed. Detach the fibre by pulling and put it in the fibre scrap container (10).

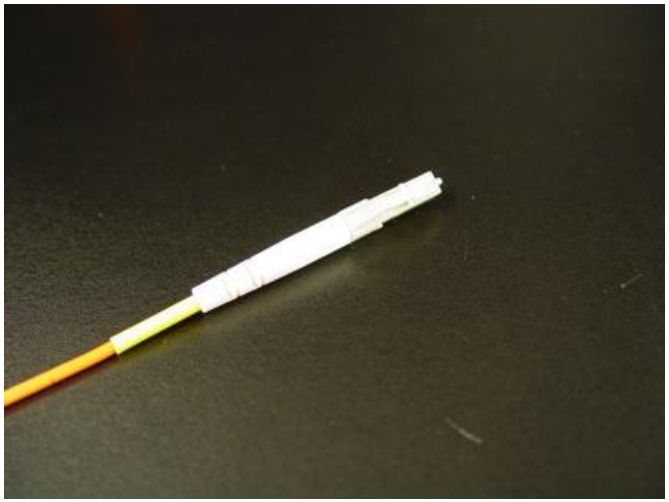
Be sure to dispose of all fiber ends per company practice



Insertion into the connector

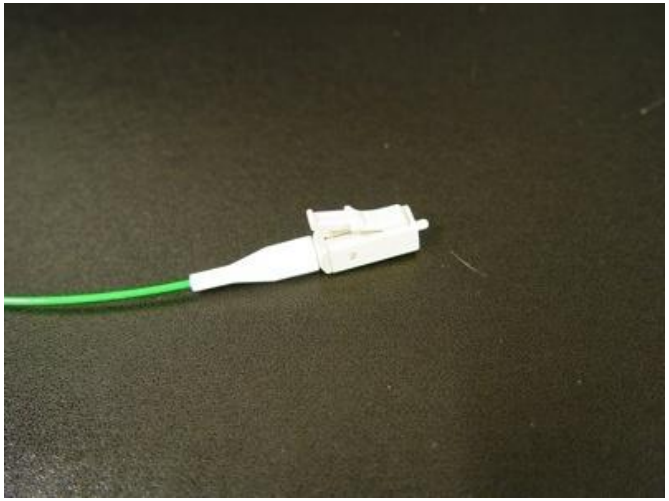
CABLE (N205.631 only)

Push the boot (C) onto the rear part of the connector.



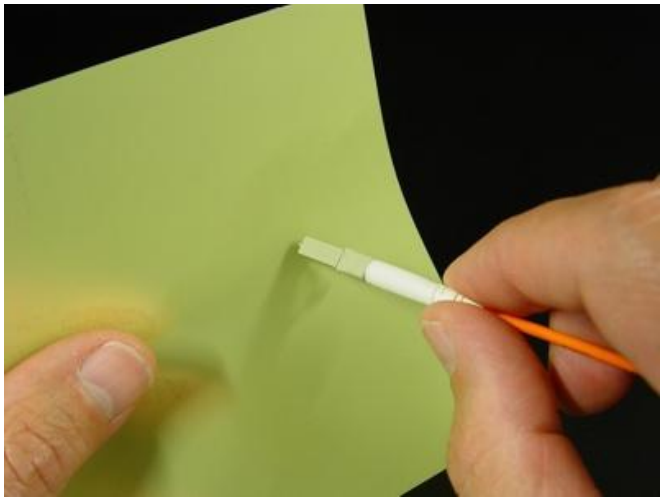
FIBRE

Push the boot onto the rear part of the connector.



Polishing

Check the fibre end.
Polish the endface with the 12µ polishing paper (13a yellow) (hold the paper in one hand, do not place it on a surface yet, this in order to avoid pressure on the tip of the connector).
Only polish the top part of the bead and proceed to the next step.

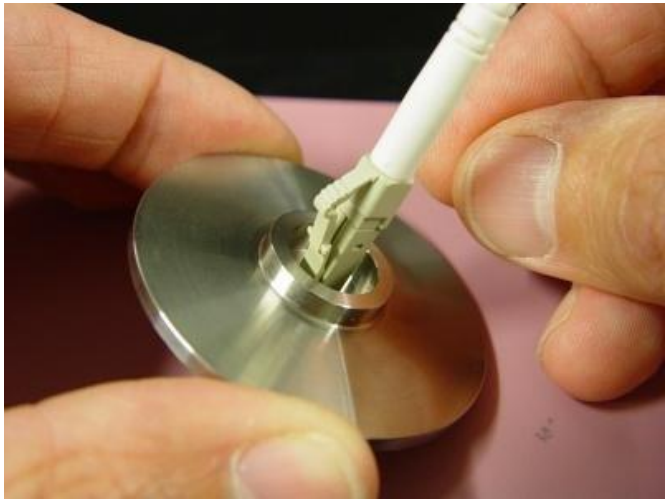


Clean the polishing pad(6) with a lint free cloth moistened with isopropyl alcohol (9). Wipe a layer of alcohol onto the rubber pad.
Before the alcohol evaporates, place the 3µ polishing paper (13a pink) on the polishing pad shiny side down. The alcohol creates a suction on the polishing paper and holds it in place.

Polishing

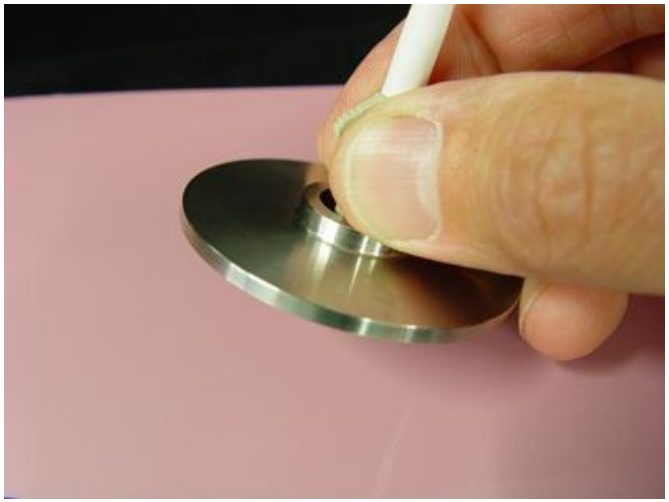
Preparation of the polishing jig for LC connector (5b).
Wipe the polishing surface of the polishing jig with a lint-free cloth moistened with isopropyl alcohol. You may blow the entire jig clean with compressed air if necessary.

Push the ferrule into the jig until it stops.

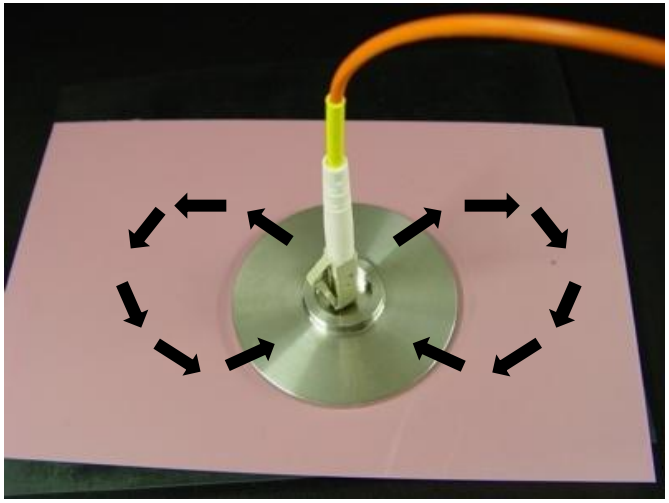


Polishing

Gently place the jig with the connector in it on the pink paper that is located on the polishing pad.
The best practice is to place the edge of the jig on the polishing paper and gently tilt it until the complete surface of the jig touches the paper.
Remember the tip is a ragged glass end which can easily be damaged.



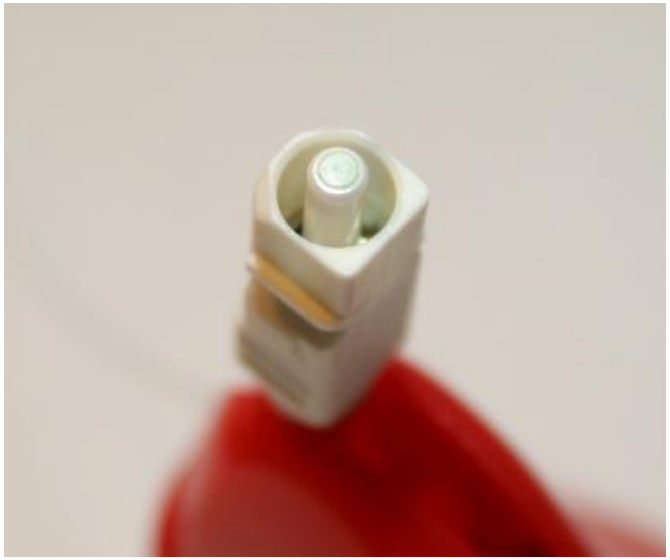
Move the jig in a figure of eight pattern by holding only the jig. The speed of your figure of eights should be between one and two per Second.



Polishing

Once the fibre is supported by the epoxy bead, begin applying light pressure on the connector while polishing in a figure of eight motion. Continue to polish on the 3µ polishing paper until a thin layer of adhesive remains on the tip.

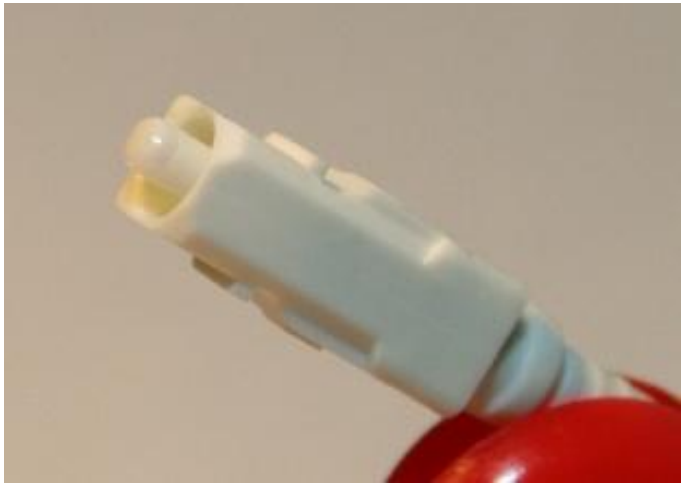
Note: SC picture – Also applicable to LC ferrule



Prepare to perform the **1µ (MM) or 0.3µ (SM)** finish. Using an isopropyl alcohol dampened lint-free cloth, clean the ferrule, the polishing jig and 3µ Polishing paper. Remove the 3µ polishing paper. Clean the rubber pad. Wipe a layer of alcohol onto the rubber pad.
Before the alcohol evaporates, place the **1µ or 0.3µ** polishing paper (**13c: green / 13d: White**) shiny side down on the rubber pad. The alcohol creates a suction on the polishing paper and holds it in place.

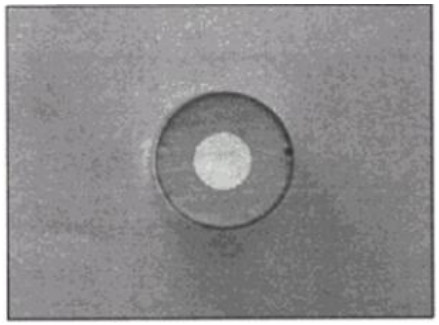
Polishing

Lightly polish until all the adhesive is removed (15 to 20 figure of eights).
Note: SC picture – Also applicable to LC ferrule
Before inspection with the microscope:
Using an isopropyl alcohol dampened lint-free cloth, clean the ferrule.
During this process, gently push back the ferrule: it should move back and then return to its original position when the pressure is released.
If the ferrule is not moving, the back of the connector is glued and there is no recovery possible: cut the connector and try again.

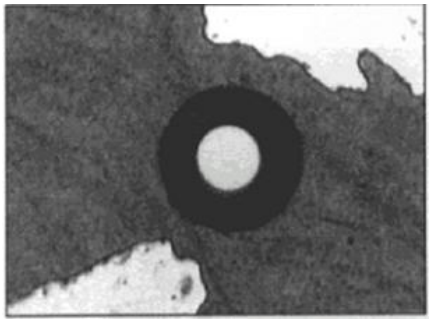


Place the LC adapter on the microscope.
Insert the connector in the adapter.
Turn on the light and adjust the focus.

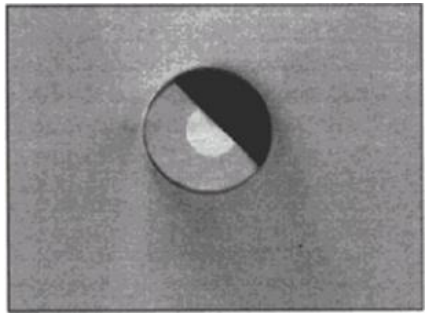
Polishing



Good polishing result.

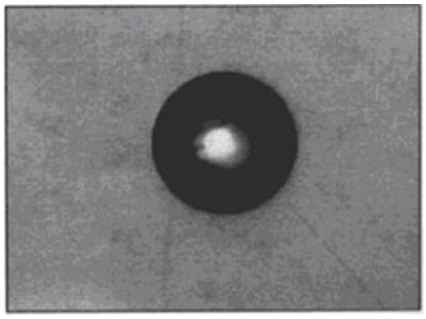


Needs more polishing;
Some adhesive is still on the ferrule.



Too much pressure when scribing.

NO RECOVERY POSSIBLE

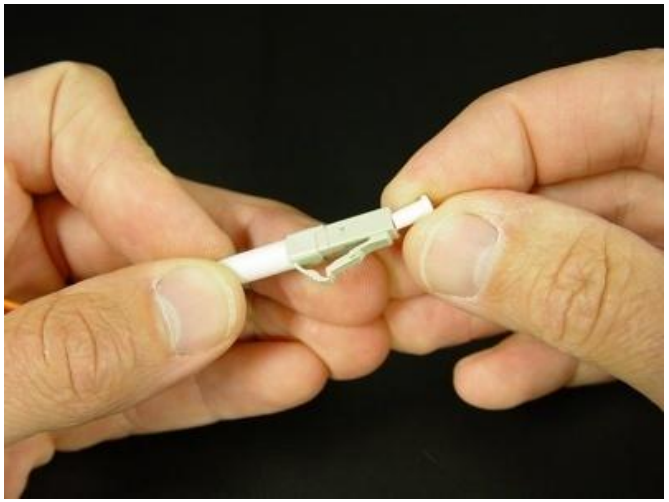


Fibre scribed too long and broke off during polishing or too much downward pressure during polishing.

Final assembly

Place the dust cap on top of the connector to protect the end face.

The connector is now assembled.



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